



**Australian Government**

# **AURBTD3004 Repair and overhaul bicycle suspension systems**

**Release 1**

## AURBTD3004 Repair and overhaul bicycle suspension systems

### Modification History

Release	Comment
Release 1	<p>Replaces AURB316646A Repair/overhaul bicycle suspension systems</p> <p>Unit code updated to meet policy requirements.</p> <p>Minor changes to unit title</p> <p>Reference to OHS legislation replaced with new WHS legislation</p>

### Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to inspect, plan, and safely repair, overhaul and test bicycle suspension systems.</p> <p>It requires the ability to understand specifications and use specialist tools and equipment.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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### Application of the Unit

Application of the unit	<p>This unit applies to individuals who undertake the inspection, repair/overhaul and testing of mechanical, air and hydraulic bicycle suspension systems in a bicycle retail, service and repair environment. It includes installation, replacement and repair or overhaul of components on all bicycle types.</p> <p>Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment.</p>
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## Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

Not applicable.

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Inspect bicycle suspension system	1.1. Inspect bicycle suspension system for faults and worn or damaged components 1.2. Determine repairs by visual, aural and tactile inspections and measurements 1.3. Compare conditions found with bicycle suspension system specifications and customer use requirements 1.4. Identify repair and replacement options for bicycle suspension system following workplace procedures 1.5. Document and cost repairs and replacements and obtain customer approval for work to be undertaken
2. Prepare for repair of bicycle suspension system	2.1. Plan repair and overhaul sequence, including post-repair testing and checking process 2.2. Determine availability of tooling and equipment 2.3. Prepare parts list and determine availability of replacement components 2.4. Identify additional persons to assist in repair process and make arrangements 2.5. Select tooling and equipment to meet job requirements and check to ensure they are in good working order
3. Repair, overhaul and test bicycle suspension system	3.1. Perform repair/overhaul of bicycle suspension system according to plan 3.2. Use personal safety equipment and precautions to protect others in the workplace 3.3. Handle and use tooling and equipment in accordance with workplace health and safety (WHS) requirements 3.4. Check customer requirements and bicycle suspension system specifications following repair/overhaul procedures 3.5. Operate repaired bicycle suspension system through full range, noting test results, including non-conformity 3.6. Check repaired bicycle suspension system, complete adjustments and alignments, and prepare unit for delivery
4. Complete work and clean up	4.1. Store portable tooling and equipment in approved designated areas 4.2. Update workplace records, customer file and warranty information as required by enterprise 4.3. Clean up work area and dispose of waste in accordance with workplace procedures

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

Required skills include:

- technical skills to the level required to safely use tooling and equipment to repair/overhaul a range of bicycle suspension systems, perform tests and make adjustments
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to report work outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to understand information related to work orders, including common industry terminology, plans and safety procedures, prepare reports and interpret technical information and specifications
- numeracy skills to the level required to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- problem-solving skills to the level required to use diagnostic processes, and identify technical and procedural problems to avoid planning, scheduling problems, and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

Required knowledge includes:

- bicycle anatomy and terminology
- classification of bicycle suspension systems and identification of system components and their functions
- purpose and requirements of bicycle suspension systems and their relationship to wheels, drivetrain and frame
- application of mechanical and hydraulic principles as they relate to bicycle suspension systems
- materials used in bicycle suspension systems
- repair/overhaul procedures for suspension systems
- Australian standards applicable to bicycles
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environmental, relevant to repair/overhaul of bicycle suspension systems
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to repair/overhaul of bicycle suspension systems

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
<p>The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.</p>	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Assessors must be satisfied that the candidate can competently and consistently:</p> <ul style="list-style-type: none"> <li>• observe safety procedures and requirements</li> <li>• communicate effectively with others involved in or affected by the work</li> <li>• select methods and techniques appropriate to the circumstances</li> <li>• complete preparatory activity in a systematic manner</li> <li>• repair and overhaul a range of bicycle suspension systems to manufacturer/component supplier specifications</li> <li>• test bicycle suspension systems to manufacturer/ component supplier specifications.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<ul style="list-style-type: none"> <li>• The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.</li> <li>• Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.</li> <li>• Assessment is to comply with relevant regulatory requirements, including specified Australian standards.</li> <li>• Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.</li> <li>• The following resources should be made available: <ul style="list-style-type: none"> <li>• a range of bicycle suspension systems</li> <li>• equipment, hand and power tools appropriate to repairing suspension systems</li> <li>• technical specifications and standards</li> <li>• workplace documentation.</li> </ul> </li> </ul>
<b>Method of assessment</b>	<ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>• Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.</li> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to</li> </ul>

<b>EVIDENCE GUIDE</b>	
	<p>ensure its correct interpretation and application.</p> <ul style="list-style-type: none"> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul>
<b>Guidance information for assessment</b>	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

## Range Statement

### RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b>Suspension systems</b>	<p>Suspension systems may include:</p> <ul style="list-style-type: none"> <li>• elastomer and spring units</li> <li>• mechanical, air and hydraulic systems</li> <li>• hydraulic fluids</li> </ul>
<b>Service items</b>	<p>Service items may include:</p> <ul style="list-style-type: none"> <li>• frame and suspension geometry</li> <li>• disassembly and cleaning</li> <li>• suspension bearings</li> <li>• lubricants</li> <li>• suspension compression ratios</li> <li>• elastomer and spring system lubricating oils</li> <li>• seals and fasteners</li> </ul>
<b>Tooling and equipment</b>	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> <li>• hand tooling</li> <li>• hand-held power tooling</li> <li>• floor stands and workbench</li> </ul>
<b>Materials</b>	<p>Materials may include:</p> <ul style="list-style-type: none"> <li>• a range of bicycle suspension systems</li> <li>• spare parts</li> <li>• cleaning materials</li> </ul>
<b>Testing</b>	<p>Testing is to confirm:</p> <ul style="list-style-type: none"> <li>• safety and efficiency</li> <li>• stable handling, turning and steering</li> <li>• no failure in the suspension system</li> </ul>
<b>Information/documents</b>	<p>Information/documents may include:</p> <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>• safe work procedures related to repair and overhaul of bicycle suspension systems</li> <li>• regulatory/legislative requirements pertaining to bicycle safety</li> </ul>



<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> <li>• Australian standards</li> </ul>
<b>WHS requirements</b>	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>
<b>Legislative requirements</b>	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• WHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• relevant industry codes of practice</li> <li>• duty of care</li> </ul>
<b>Environmental requirements</b>	<p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>
<b>Quality requirements</b>	<p>Quality requirements may include:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal organisational quality policies and procedures</li> <li>• enterprise operations and procedures</li> </ul>

**RANGE STATEMENT****Organisational policies and procedures**

Organisational policies and procedures may include:

- quality policies and procedures, including Australian standards
- WHS, sustainability, environment, equal opportunity and anti-discrimination
- manufacturer specifications and industry codes of practice
- safe work procedures
- reporting and recording procedures

**Unit Sector(s)**

<b>Unit sector</b>	Bicycle
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**Co-requisite units**

Not applicable.

**Competency field**

<b>Competency field</b>	Technical - Steering and Suspension
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